

January 19, 2001

TO: Environmental Health Managers **GMP #112**
District Health Directors
OEHS Staff

FROM: Donald J. Alexander, Director
Division of Onsite Sewage and Water Services

SUBJECT: Interim Approval for Puraflo™ Peat Filter Treatment System
Onsite – Product Approval - Puraflo™

In 1995 Bord Na Mona Environmental Products U.S., Inc. sought and received approval to begin an experimental testing protocol for the Puraflo™ system under § 2.25 of the *Sewage Handling and Disposal Regulations* (the *Regulations*). The basis for the testing protocol was the stated policy of the *Regulations* to "...encourage the development of any new methods, processes, and equipment which appear to have application for the treatment and disposal of sewage; however, new developments shall have been thoroughly tested in a full scale or representative pilot system utilizing this process and equipment." The protocol was designed to gather performance data from systems providing highly treated effluent installed where the separation distance to rock and/or water table was less than required by the *Regulations* and utilized soil absorption areas smaller than required under the *Regulations*. In addition, absorption area configurations did not substantially comply with the *Regulations* and the protocol would demonstrate the treatment capability of the Puraflo™ modules. The specific details of the protocol were published June 9, 1995, as GMP #69.

On March 19, 1996, the experimental protocol was amended to modify the backup system requirements as the result of a variance granted by the commissioner and to clarify the absorption area requirements. The amended protocol was issued as GMP #79 and the previous one was rescinded. The 1996 protocol allowed for a backup system that provided a 100% reserve area meeting the same site and soil requirements contained in the protocol and also provided new charts for sizing absorption areas. Both the 1995 and 1996 protocols required detailed monitoring and testing of 24 systems and limited the total number of Puraflo™ systems to 100 statewide.

The experimental protocol was revised again on February 12, 1998, to reflect an increase in the

number of systems allowed statewide and to clarify the roles of individuals in the testing

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and evaluation portion of the protocol. The 1998 revisions to the protocol were published in GMP #93 which replaced GMP #79.

At the end of the experimental testing period the Virginia Department of Health (VDH) reviewed the performance of the Puraflo™ system under the experimental protocol. That review included evaluating the specific performance data gathered from the experimental protocol, field observations of selected systems, and anecdotal evidence offered by VDH field staff, system owners, and Bord Na Mona representatives. VDH determined that the Puraflo™ system had met the objectives established under the experimental protocol. In a letter dated January 21, 2000, State Health Commissioner Anne Peterson, M.D., M.P.H. granted a three-year waiver that would allow the Puraflo™ system to be installed during the interim period until the Board of Health promulgates regulations for this system. Commissioner Peterson's waiver was issued in accordance with § 370.D of the *Regulations* and provided that permits were to be issued in accordance with Parts I through VI of GMP #93.

Since Commissioner Peterson's January 21, 2000, waiver, a number of questions have been raised pertaining to the use of GMP #93 under Commissioner Peterson's waiver. The most compelling issue has been the sizing of absorption areas. VDH field personnel reported that they were receiving applications for permits containing Puraflo™ designs that were considerably smaller than those derived using the design tables in GMP #93. Bord Na Mona representatives reported that VDH was denying applications for system designs that complied with the criteria contained in GMP #93. The Division of Onsite Sewage and Water Services was asked to resolve the apparent conflict and this memorandum is the result of that effort.

The basis for the disagreements over the absorption area sizing appears to stem from the methods used to calculate total absorption areas. Under the experimental protocol, the sizing charts were based, first on total square footage (GMP #69), and later on the number of linear feet of trench that must be added to the primary (16' x 20') absorption pad when the pad alone was not sufficient to provide the required absorption area (GMP #79 & #93). The basis for the sizing charts included an allowance for "sidewall" absorption area¹. The experimental protocol allowed systems to be configured as pad-only, trench-only, or as a combination of trenches and a pad.

1 VDH has always used actual trench-bottom area as the sizing basis for all onsite systems. Bord Na Mona's inclusion of sidewall absorption area was considered acceptable as part of an experimental protocol. This revised policy contains sizing criteria that are based on **actual trench-bottom area**.

Under the experimental protocol the practice of utilizing trench-only configurations in some soils, typically Texture Groups III and IV, rapidly developed. The disagreements over sizing appear to come from two different methods for calculating the total absorption area. Bord Na Mona representatives assumed that trench-only configurations would be based solely on the formula used to produce the charts in the experimental protocol and VDH staff assumed that the

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primary pad area (320 square feet) was the starting point for adding additional absorption area when needed. In Group III and IV soils using the Bord Na Mona formula for sizing trench-only systems tended to produce systems approximately 10%-15% smaller than systems sized with the pad area as the starting point for adding additional absorption trenches. In Group I and II soils the size difference for trench-only systems was even greater and approached 50% or more. The sizing methodology contained in this policy is based on the method used to design the systems evaluated in the experimental protocol. This policy also establishes a minimum absorption area size of 320 square feet per system, which was also part of the experimental protocol.

In addition to dealing with the sizing criteria for Puraflo™ systems, this memorandum will also seek to clarify the scope of the approval granted, establish performance expectations for the system consistent with the performance measured during the experimental protocol, and provide other minor technical clarifications.

Interim Approval™

Puraflo™

January 19, 2001

I. System description.

The Puraflo™ wastewater treatment system consists of the following listed key components. This protocol is based on the specific components listed. Bord na Mona may request and use components deemed equivalent to those described in this document after receiving written approval from the Division of Onsite Sewage and Water Services. Unless otherwise stated, the components of the Puraflo™ system shall comply with the intent, objectives and requirements of the *Sewage Handling and Disposal Regulations*.

- A. Building Sewer. The building sewer used in conjunction with a Puraflo™ system shall comply with Part IV, Article 2 of the *Sewage Handling and Disposal Regulations* (the *Regulations*).
- B. Pretreatment system. The minimum pretreatment system preceding a Puraflo™ system shall be a septic tank designed and installed in compliance with Part V of the *Sewage Handling and Disposal Regulations* but having a holding capacity of not less than 1,000 gallons.
- C. Secondary treatment system. The Puraflo™ system consists of a number of treatment modules, each with a capacity of approximately 125 GPD, nominally 7'1" x 4'7" x 2'6" (L,W,D) containing a proprietary biofibrous media. Septic tank effluent is dosed from a sump to the treatment modules where treatment occurs by a combination of physical, biological and chemical processes. The average treatment capability of the Puraflo™ is reported in Table 1 and, in part, formed the basis for this approval.

Parameter	Effluent Limit
BOD ₅ (mg/l)	10mg/l
TSS (mg/l)	10mg/l
Fecal Coliform	200 cfu

Table 1

- D. Sampling port. Each system shall be provided with a sampling port with access to the ground surface for the purpose of providing access to the treated effluent for compliance testing.

- E. Conveyance system. All effluent conveyance components designed to move effluent from the Puraflo™ system to an absorption area shall comply with the requirements of the *Sewage Handling and Disposal Regulations*.
- F. Absorption area. When the criteria found in the *Sewage Handling and Disposal Regulations* and Figure 1 (of this document) are met, the absorption field shall be designed in accordance with Table 2 below for all systems covered by this policy.

Actual Trench Bottom Area				
	Loading Rates (Gallons per Square Foot) Pad Area	Trenches		
		1.5 Wide	2.0 Wide	3.0 Wide
20 or less	1.66	2.78	2.50	2.22
25	1.33	2.22	2.00	1.78
30	1.11	1.85	1.66	1.48
35	0.95	1.59	1.43	1.27
40	0.83	1.39	1.25	1.11
45	0.74	1.23	1.11	0.99
50	0.67	1.11	1.00	0.89
55	0.61	1.01	0.91	0.81
60	0.55	0.93	0.83	0.74
65	0.51	0.85	0.77	0.68
70	0.48	0.80	0.72	0.64
75	0.44	0.74	0.67	0.59
80	0.42	0.69	0.63	0.56
85	0.39	0.65	0.59	0.52
90	0.37	0.62	0.56	0.49
95	0.35	0.58	0.53	0.47
100	0.33	0.56	0.50	0.44
105	0.32	0.53	0.48	0.42
110	0.30	0.51	0.45	0.40
115	0.29	0.48	0.43	0.39
120	0.28	0.46	0.42	0.37

Table 2

II. Scope of Approval.

This waiver is granted for use of the Puraflo™ system in conjunction with facilities generating wastewater flows of 1,000 GPD or less and of residential strength (BOD5 <250 mg/l) when used in accordance with the siting criteria contained in this policy.

Larger flows may be permitted but shall be reviewed individually to assure compliance with the requirements of §441 of *Sewage Handling and Disposal Regulations*.

Approval is also granted to the Puraflo™ modules as an aerobic biological system pursuant to §800 of the *Sewage Handling and Disposal Regulations*. This approval is granted for the use of Puraflo™ modules in conjunction with a disposal methodology contained in the *Sewage Handling and Disposal Regulations*. Please note the distinction between the complete “Puraflo™ system” which includes the modules and siting and design criteria specific to the Puraflo™ system and the “Puraflo™ modules.” The modules consist of the biofibrous treatment units and their associated distribution system. The modules are recognized as an approved treatment device, when used to treat residential strength septic tank effluent, suitable for use with disposal methodologies defined within the *Sewage Handling and Disposal Regulations*.

General approval is also granted for the Puraflo™ modules for use as a discharging system under the *Alternative Discharging Sewage Treatment Regulations for Individual Single Family Dwellings* (12 VAC 5-640-10 et seq.).

III. Siting Criteria.

The Puraflo™ system may be used to provide wastewater treatment at any site that meets one of the following classifications:

1. Any site that does not comply with the minimum stand-off to rock and/or water table requirements contained in the *Sewage Handling and Disposal Regulations* but does comply with the requirements of Figure 1.
2. Any site that fully complies with the criteria contained in the *Sewage Handling and Disposal Regulations*, including but not limited to absorption area sizing percolation rate, landscape position, stand-off distances, and set-back distances.
3. Any site that complies with §280 C.2. For sites complying with §280 C.2, the homeowner may elect to use a system permitted under the *Sewage Handling and Disposal Regulations* that incorporates Puraflo™ modules for pretreatment or a Puraflo™ system as described in this policy.

IV. System Design.

All portions of the system shall be designed to provide wastewater treatment and disposal that is equal or superior to that which may be obtained with a conventional gravity drainfield system. In general, the system must provide primary treatment, advanced secondary wastewater treatment, and effluent distribution and application to soils capable

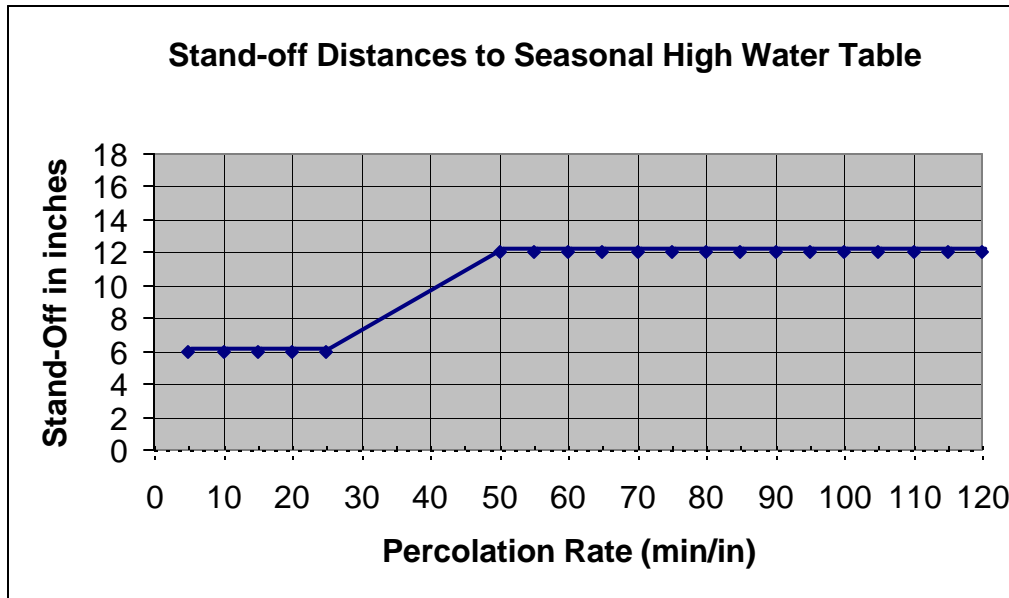


Figure 1

of providing sufficient additional treatment to render the wastewater harmless to humans and the environment. Specific deviations from the design practices contained in the *Sewage Handling and Disposal Regulations* are described below.

A. Field Design. The absorption area required may be achieved by use of the pad area, gravel absorption trenches, or a combination of both pad area and trenches provided:

1. The minimum stand-off to water table, or other limiting factor, is achieved over the entire absorption area. This assures that sufficient suitable soil, as may be required, exists between the soil and the limiting factor to provide additional treatment.

2. All pads and trenches shall be installed on contour.

3. All pad areas shall be designed such that the bottom pad area is level and

installed into natural, weathered in place soil while maintaining separation distances to all soil limiting factors. No portion of the pad bottom area may be installed on fill material.

4. The system shall be designed to provide nominally equal flow throughout all portions of the absorption area. Distribution of treated effluent by gravity or pressure dosing (after the treatment modules) is acceptable.

B. Area Requirements and Calculations. Puraflo™ systems shall be designed in

accordance with Table 2. Systems may be configured where the absorption area consists of a "pad" (absorption bed) with the treatment unit(s) placed above the absorption pad, or the absorption area may consist of gravel trenches, or a combination of trenches and pad area.

1. The size of the pad, if utilized, is generally rectangular in shape with variable dimensions established to meet the site-specific conditions encountered. The pad area shall be placed on contour and the total area shall not exceed 200 square feet per module. For the purpose of dividing flow between pads and trenches (where both are used in a single system) the following methodology is used. Flow to the pad is determined by the formula $Q = Plr * A$ where Q equals the flow to the pad in gallons, Plr equals the pad loading rate in gallons per square foot (found in Table 2) and A is the area of the pad in square feet.
2. When a pad is not utilized (typically but not necessarily Class III and IV soils) or when the flow to the pad (Q) as determined above is less than the total daily flow to the system, absorption trenches are required. Trenches utilized may be 1.5', 2.0', or 3.0' in width. The number of square feet needed is determined by establishing the flow to the trenches in gallons per day and dividing by loading rate in Table 2.
3. The minimum area for any Puraflo™ system shall be 320 square feet.
4. Conditional use permits based on limited occupancy (or other specified criteria) shall be permitted in accordance with the criteria contained in the *Sewage Handling and Disposal Regulations*.
5. No additional area reduction shall be permitted for the use of water saving fixtures.

C. Distribution. When the absorption area is located contiguous to the Puraflo™ treatment unit, Bord na Mona's design for gravity flow through adjacent gravel trenches may be used provided:

1. The bottom of all portions of the absorption area shall be installed at a single elevation (+/- 2") and on contour (requires a flat or essentially flat site), or
2. All absorption trenches shall be installed on contour. On sloping sites, parallel distribution (utilizing a distribution box or pressure distribution) shall be employed when laterals are installed on more than one elevation.
3. Distribution may be accomplished by pressure distribution before or after the treatment modules, gravity distribution to laterals out of the pad area, or gravity or

pressure distribution to a distribution box or manifold provided effluent will be applied proportionally to the absorption area as described in Part IV A (Field Design) above.

E. Depth. The minimum installation depth of the system (i.e., the bottom of the gravel pad and/or trenches that comprise the absorption area), shall be level with the naturally occurring grade. On sloping sites this shall be measured on the downhill side of the installation. Cover material shall be provided from the top edge of the Puraflo™ units horizontally in all directions to existing grade and shall cover the top and side of the pad area, which may be exposed during construction. The minimum cover over the pad area, and any trenches, shall not be less than four inches.

F. Slope. The maximum allowable slope shall be 50%.

G. Pump Design.

The Puraflo™ system contains a pump and pump chamber as an integral part of the system to dose the biofibrous media. The pump system shall comply with the criteria for pumps, pump chambers and appurtenances as found in the *Sewage Handling and Disposal Regulations*.

V. Installation.

- A. All system components shall be installed in accordance with this policy and in accordance with the manufacturer's directions.
- B. Prior to placing in operation, all mechanical components, pumps, pump cycling, and filters, must be demonstrated to be fully operational in accordance with their design.
- C. The manufacturer's recommendations shall be followed for system startup.

VI. Operation.

Bord na Mona shall provide all system owners with written and oral instructions on the proper operation and maintenance of the Puraflo™ system. At a minimum this will include the items contained in §2.5 (see attached) of the December 1994 Bord na Mona proposal. Updates, revisions and other changes to this section are the responsibility of Bord na Mona Environmental Products USA, Inc. Copies of changes shall be submitted to VDH on an informational basis.

Nothing in this approval is intended to prevent or restrict the development of instructional

materials for public use. No prior approval of such literature is required provided the literature contains no endorsements, approvals, or suggestions that VDH in any manner promotes the use of one system above any other.

VDH recognizes that all systems have operational and maintenance requirements, which are necessary to assure that performance standards are met. In order to evaluate operational and maintenance requirements, VDH reserves the right to inspect systems during normal working hours or at other reasonable times for compliance with this policy. VDH recommends at least an annual inspection of the system by a qualified individual.

VII. Responsibilities and permitting procedures.

- A. This approval has been granted specifically for the process described in the application made by Bord na Mona Environmental Products, US, Inc. for the Puraflo™ system. Any changes to the components used in this process must be reviewed and approved by VDH on a case-by-case basis prior to use.
- B. Bord na Mona may, at its discretion, establish criteria for designers and installers above and beyond any requirements established by VDH. Bord na Mona is responsible for establishing the standards for qualifying as a Bord na Mona certified designer or installer and for establishing the requirements for maintaining said certification. Enforcement of the standards established by Bord na Mona are the responsibility of Bord na Mona. VDH encourages training and certification by all proprietary system manufacturers to assure competent services are provided to customers using a proprietary system.
- C. Applications for a Puraflo™ system shall be considered in the same manner as a Type II system.
- D. Permitting shall be done by the local health department based on their satisfactory site evaluation and review of plans and specifications prepared in accordance with the manufacturer's specifications and all applicable state regulations and policies and any relevant local ordinances.
- E. Bord na Mona shall be responsible for providing up to two classes annually to VDH staff. The training shall include a manual covering proper siting, sizing, construction, installation, and inspection processes for the Puraflo™ system. All training materials, the course syllabus and training locations shall be reviewed and approved by the Division of Onsite Sewage and Water Services prior to offering the training.

VIII. Performance Expectations.

Each Puraflo™ system is expected to perform in accordance with Experimental Protocol that formed the basis for this approval. Specifically, there shall be no visible effluent on the ground surface and each system shall substantially comply with the performance criteria contained in Table I. This policy is not intended to require homeowners to sample their systems on a routine basis. When a visual examination of the system indicates that a system may not be operating within the limit established by this approval, VDH may collect, or require to be collected, sufficient samples to establish the treatment levels provided by the individual system. No single sample result shall be considered sufficient to establish a system has failed. Failure to substantially comply with performance limits established in Table 1 shall be considered as a system failure under § 12 VAC 5-610-350.

January 21, 2000

Mr. Greg O'Donnell, P.E.
Technical Director
Bord na Mona Environmental Products U.S., Inc.
P.O. Box 77457
Greensboro, NC 27417

Dear Mr. O'Donnell:

As part of GMP #69 issued June 9, 1995, Bord na Mona Environmental Products U.S., Inc., voluntarily entered into an experimental protocol designed to collect data to determine if the State Health Commissioner would grant a waiver to the issuance of an experimental operating permit for Puraflo™ systems pursuant to 12 VAC 5-610-370 C of the *Sewage Handling and Disposal Regulations* (the *Regulations*). This letter is to advise you that the Virginia Department of Health (VDH) is rendering a decision on the experimental protocol originally established for the Puraflo™ system in GMP #69 and subsequently revised and readopted as GMP # 79 and GMP # 93. The Department is rendering a decision at this time because we believe the results received to date show consistency and stability of the process over more than 18 months (the originally envisioned experimental period). This consideration, along with the potential benefits to the citizens of the Commonwealth of having a wastewater system that significantly expands the site characteristics where wastewater can be safely disposed has prompted the Department to act at this time.

The full-scale experimental demonstration project can be defined in terms of three objectives. These objectives were to test:

1. Modified sizing criteria resulting in a smaller absorption area than a system receiving septic tank effluent. The new criteria were based upon improved effluent quality and included use of trenches, beds (or pad area), and a combination of the two.
2. Installation depths less than 18 inches and as shallow as at-grade.
3. Revised stand-off distances to water tables ranging from six inches to 12 inches as specified in GMP #93.

A total of 260 systems were installed during this demonstration period and 24 systems were monitored for their performance. Performance monitoring was conducted by Old Dominion University (ODU) and included monthly testing for BOD₅, TSS and fecal coliform removal efficiency of the modules, nitrogen dynamics through the system, fecal coliform monitoring 12 inches beneath the absorption pad and monitoring of phosphorus, chlorides, temperature and pH.

An evaluation of the physical system performance was made during each sampling event. In addition to the performance testing, each year for three years random visits were made of about a dozen systems throughout the state during the early spring. The purpose of these visits was to observe systems during stress (wet) conditions and evaluate user satisfaction.

During the demonstration period there have been two reported surface failures. Both of the reported failures were immediately investigated. In one case the report was found to be erroneous. In the second instance, the system was failing for several days. While the cause could not be definitively identified, it appears probable that the cause was a fixture leaking or left running while the occupants were away.

Based on the observations made by VDH and ODU personnel and anecdotal evidence and experience informally reported by local health department personnel, it appears that the Puraflo™ system has functioned satisfactorily in terms of effluent disposal. Consequently, I find that the revised sizing criteria and reduced installation depth criteria employed in GMP #93 have been operationally demonstrated to my satisfaction. Of the three experimental objectives noted above, the issue of the reduced separation distance remains to be considered.

The fecal coliform standard established in the protocol was 10 fecal coliform units (fcu) per 100 ml average (geometric mean) in all the grab samples and no individual grab sample was to exceed 200 fcu. This parameter was to be measured 12 inches below the bottom of the absorption area. This part of the standard was intended to evaluate the system's performance on sites with reduced stand-off to water table and on sites where shallow or at-grade installation was utilized to overcome site and soil limitations.

The results of the study indicated that the geometric mean of the septic tank effluent received by the Puraflo™ treatment units contained 1.3×10^6 fcu per 100 ml. Effluent from the Puraflo™ treatment units averaged 263 fcu per 100 ml. At a depth of 12 inches below the pad area the average fecal count was 154 fcu per 100 ml. At a 95% confidence interval this apparent difference was not significant. The geometric mean of the samples exceeded the limit established in the protocol and numerous individual samples exceeded 200 fcu per 100 ml. After considering the data received to date, I can only conclude that the results fail to show the Puraflo™ system met the treatment standard established in the protocol.

In evaluating the fecal coliform results I believe an element of judgement is appropriate and that it would be wise to consider other research in the field and what is known about functioning of residential onsite systems. After having benefited from the knowledge and insight of other researchers in government, higher education, and industry I am satisfied that the standard established in this protocol will protect public health and is achievable using existing technology. The fact that the Puraflo™ system failed to meet the established standard in the protocol begs an explanation. The most probable explanation, as you have suggested, is that the sampling methodology was flawed and resulted in higher than expected fecal counts in the soils beneath the units. In retrospect, it appears plausible that the study may have had several *potential* flaws. This letter is not intended to discuss these considerations in detail but rather to advise you of the scope and nature of my deliberation and to communicate my decision.

An element of my consideration is comparing the relative risks of applying Puraflo™ effluent in the receiving environments evaluated in this protocol with other existing regulatory criteria. The relative risks, while not necessarily quantitative, should make sense in terms of their relative ranking and can *assist* in reaching a decision. Under GMP #93, the use of the Puraflo™ system in soils with estimated or measured percolation rates between 5 and 25 minutes per inch (MPI) requires a six inch standoff to water table. Comparing this standard to the 2 to 6 inches allowed in our current *Regulations* for septic tank effluent in similar soils clearly shows the cleaner Puraflo™ effluent is released into an environment further from the treatment limiting feature (i.e., the water table). While not necessarily supported by the data in *this* study, it appears that the Puraflo™ system as used in GMP #93 provides at least the same or better public health protection when compared to systems designed in compliance with the current *Regulations*. At rates between 25 and 50 mpi the standoff distance to water table mirrors the *Regulations* for septic tank effluent. I would expect less public health risk from an advanced secondary effluent such as that produced by a Puraflo™ unit than from septic tank effluent. Again, the relative ranking of risks favors approval. Above 50 mpi the standoff distances are the same as those previously approved under GMPs #20 and #97 for secondary effluent. In this case the risks associated with a Puraflo™ system and a GMP #20 or #97 system appear approximately equal.

Therefore, it is my carefully considered opinion, that even though the fecal coliform test results collected in this study failed to pass the standard established in the protocol, I am granting a waiver of the experimental criteria established in §370 of the *Regulations* for the Puraflo™ system. The results of the study, when considered in the context of other research, the limits of the methodologies and site controls employed in this study, and the existing regulatory framework in Virginia, convince me that the system has demonstrated operational competence in full scale testing and that there should be no adverse health risks associated with the continued use of this system.

Therefore, in accordance with section 370 D of the *Regulations*, the Department will propose revisions to the *Regulations*, which will allow the use of the Puraflo™ and equivalent systems. Revising regulations can be time consuming. I am therefore granting a waiver of the experimental requirement in the *Regulations* for the Puraflo™ system for a period of up to three years from the date of this letter while revision to the *Regulations* are proposed. In the event the revision process exceeds three years the Department will reconsider this decision in light of all available information. This waiver is for the Puraflo™ system when used in accordance with Parts I through VI of GMP #93.

Additionally, based on the experience with the operational and maintenance requirements of the Puraflo™ system encountered during this study, I am interpreting the system to be a Type II system. I believe this is in keeping with the spirit of both the *Sewage Handling and Disposal Regulations* and the concept of “pre-engineered septic system[s]” mentioned in a revision to §32.1-163.5 D of the *Code of Virginia*. This means that formal engineering plans and specifications are not required unless the size or complexity of the system warrants them.

The data collected under this protocol also allow two additional decisions regarding the Puraflo™ system. Based on the results received, the Puraflo™ system is granted general approval for 10-10 (BOD₅ and TSS) discharge under the *Alternative Discharging Sewage*

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Treatment Regulations for Individual Single Family Dwellings 12 VAC 5-640 et sec. Systems used for this application must comply with the requirements of the *Discharging Regulations*, including but not limited to the requirement for disinfection. The system may also be used as a pretreatment device under GMP #97, if used in accordance with the sizing criteria in the *Sewage Handling and Disposal Regulations* and in compliance with the requirements of GMP #97. These approvals were not requested by Bord na Mona USA and are incidental to the experimental protocol.

In closing, I would like to thank you for the cooperation, effort, and considerable resources that Bord na Mona USA has contributed to this joint public-private sector effort. I believe that all parties have benefited from cooperative work and that ultimately we can both better serve the citizens of the Commonwealth as a result. My staff has indicated that Bord na Mona and in particular Mr. Joe Walsh and you have repeatedly shown professionalism, cooperation and a spirit of helpfulness unique in our encounters. Please know that these courtesies are appreciated and have made the journey together most enjoyable.

Sincerely,

E. Anne Peterson, M.D., M.P.H.
State Health Commissioner

pc: Environmental Health Managers
Health Directors
Constance Ober